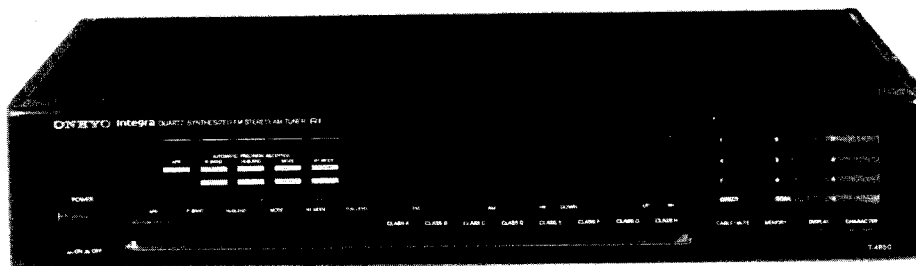


# ONKYO SERVICE MANUAL

## SYNTHESIZED FM STEREO/AM TUNER MODEL T-4850



Black and Silver models

### SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  $\Delta$  ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

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**ONKYO**  
**AUDIO COMPONENTS**

## SPECIFICATIONS

### FM:

Tuning Range: 87.50 – 108.00 MHz (50/25kHz steps) and/or 88.00 – 108.00MHz

Usable Sensitivity: Mono: 10.8dBf, 0.95 $\mu$ V, IHF  
0.8 $\mu$ V DIN (75 ohms)  
Stereo: 17.2dBf, 2.0 $\mu$ V, IHF  
20 $\mu$ V DIN (75 ohms)

50dB Quieting Sensitivity: Mono: 16.1dBf, 1.7 $\mu$ V (75 ohms)  
Stereo: 36.1dBf, 17 $\mu$ V (75 ohms)

Capture Ratio: 1.3dB (Wide)

Image Rejection Ratio: 90dB

IF Rejection Ratio: 90dB

Signal-to-Noise Ratio: Mono: 85dB, IHF  
Stereo: 80dB, IHF

Selectivity: 55dB DIN (Narrow)

AM Suppression Ratio: 50dB DIN (Narrow)

Total Harmonic Distortion: Mono: 0.1% (Wide)  
Stereo: 0.2% (Wide)

Frequency Response: 30 – 15,000Hz (+0.5 – 1.0dB)

Stereo Separation: 45dB at 1kHz (Wide)  
30dB at 70 – 10,000Hz (Wide)

Output Voltage: 0.75V

Muting Level: 17.2dBf, 2.0 $\mu$ V (75ohms)

### AM:

Usable Sensitivity: 25 $\mu$ V

Image Rejection Ratio: 40dB

IF Rejection Ratio: 40dB

Signal-to-Noise Ratio: 40dB

Total Harmonic Distortion: 0.7%

Output Voltage: 150mV

### General

Dimensions (W×H×D): 455×90×364 mm  
17-5/8"×3-5/8"×14-1/13"

Weight: 4.8kg, 10.6lbs

Supplied accessories:

- AM loop antenna×1
- FM T-shaped antenna×1
- Connecting cable×1
- RI remote control cable×1
- 75/300ohm antenna adapter×2 (Except 220V model)
- Remote control transmitter

Specifications and features are subject to change without notice.

## SERVICE PROCEDURES

### 1. Memory preservation

This unit does not require memory preservation batteries. A built-in memory power back-up system preserves contents of the memory during power failures and even when the unit is unplugged. The unit must be plugged in and the power switch turned on and off once in order to change the back-up system. Note that since this is not a permanent memory, the power switch must be turned on and off a few times each month to keep the back-up system operative. The period of time during which memory contents are preserved after power has last been turned off varies depending on climate and placement of the unit. On the average, memory contents are protected over a period of 3 to 4 weeks (a minimum of 2 weeks) after the last time power has been turned off. This period is shorter when the unit is exposed to very high humidity or used in an area with an extremely humid climate.

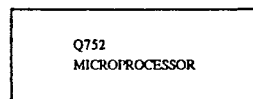
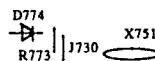
### 2. Changing the AM band step

With the exception of the worldwide model, AM BAND STEP selector switch is not provided.

When change the band step, refer the table as shown below.

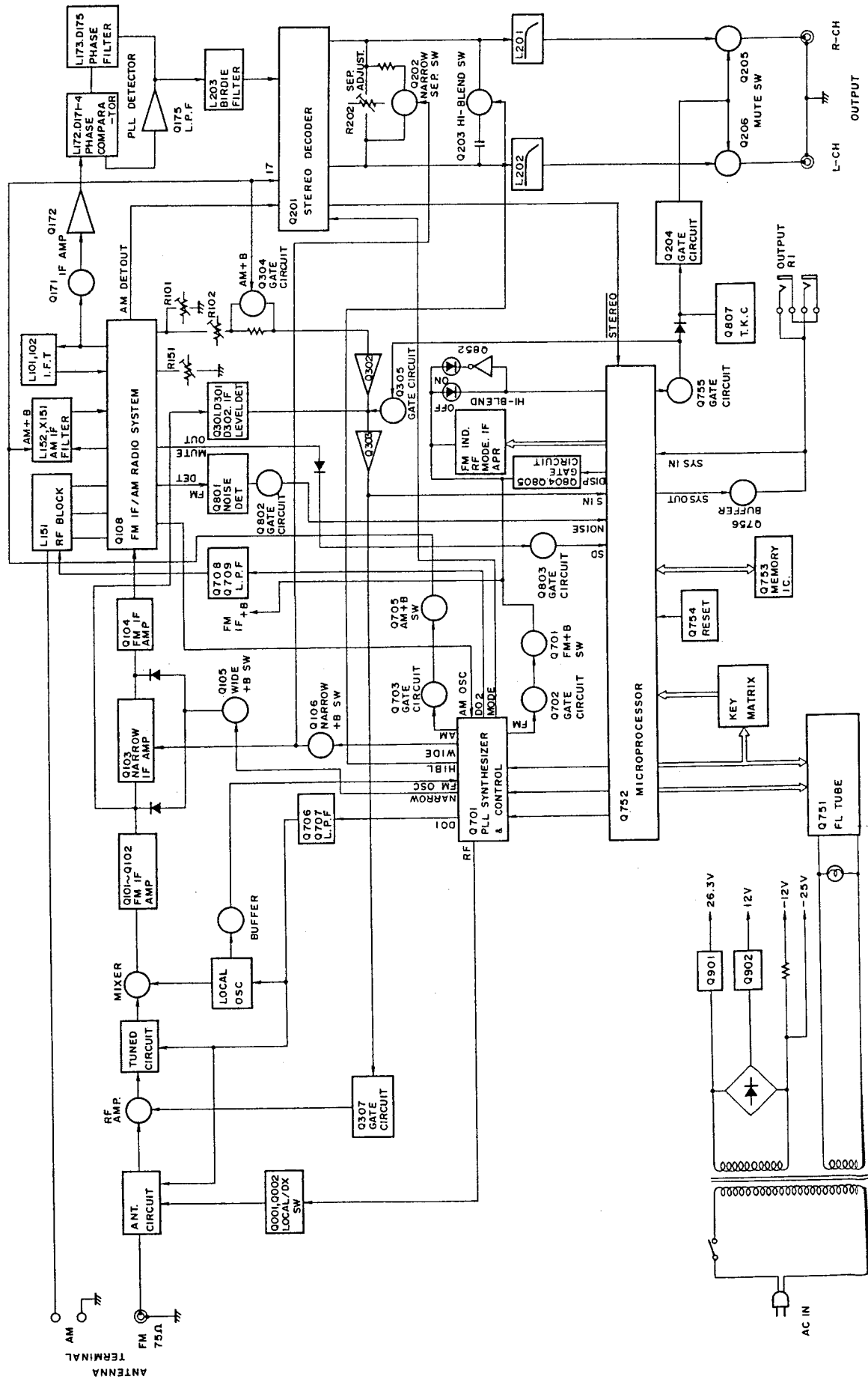
Band Step	D774	R773	J730
10kHz → 9kHz	Add	Add	Cut
9kHz → 10kHz	Remove	Remove	Short

D775 ISS133 Part No. 223163  
R775 R16J-10K Part No. 417341034

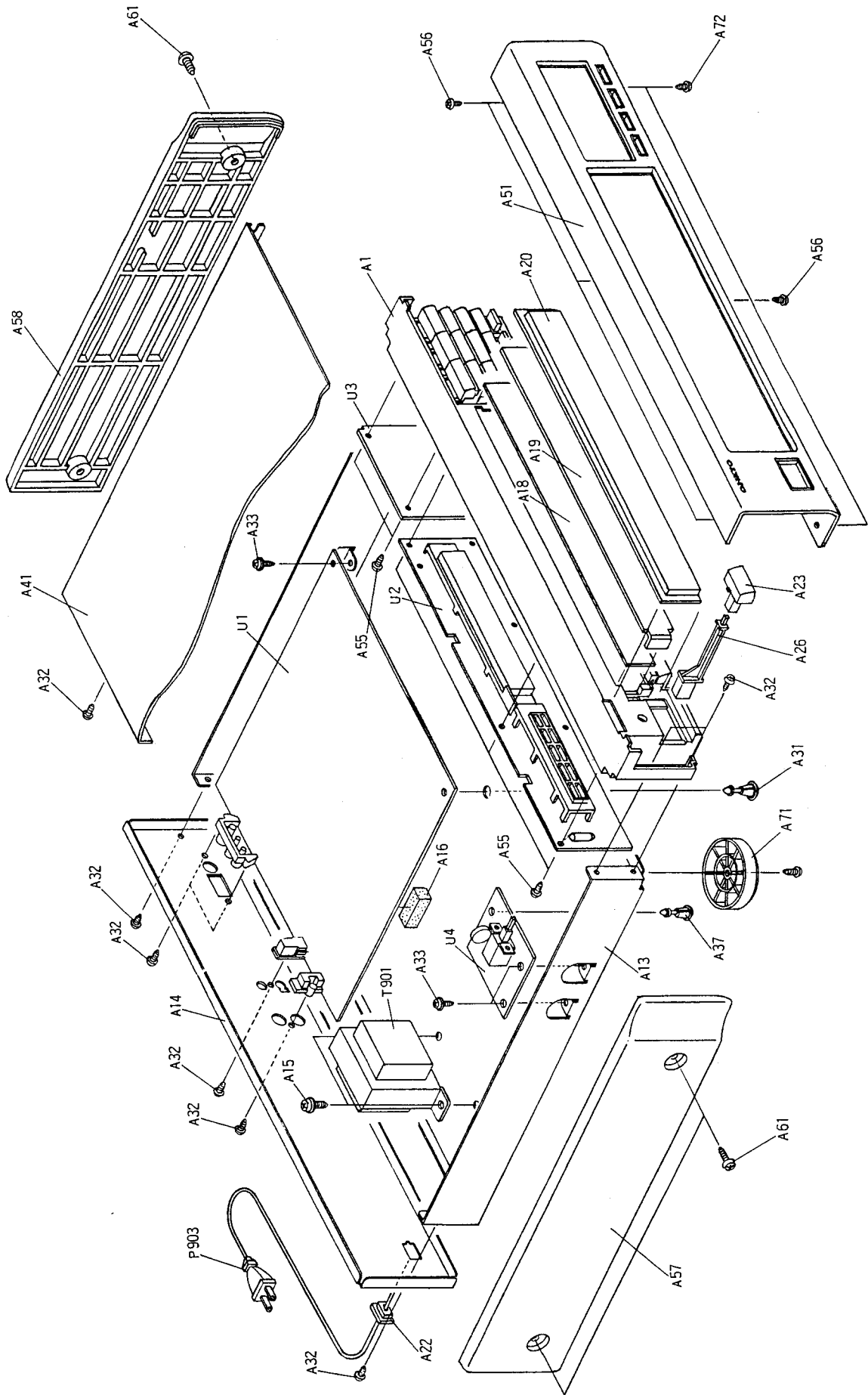


DISPLAY PC BOARD

## BLOCK DIAGRAM



# EXPLODED VIEW



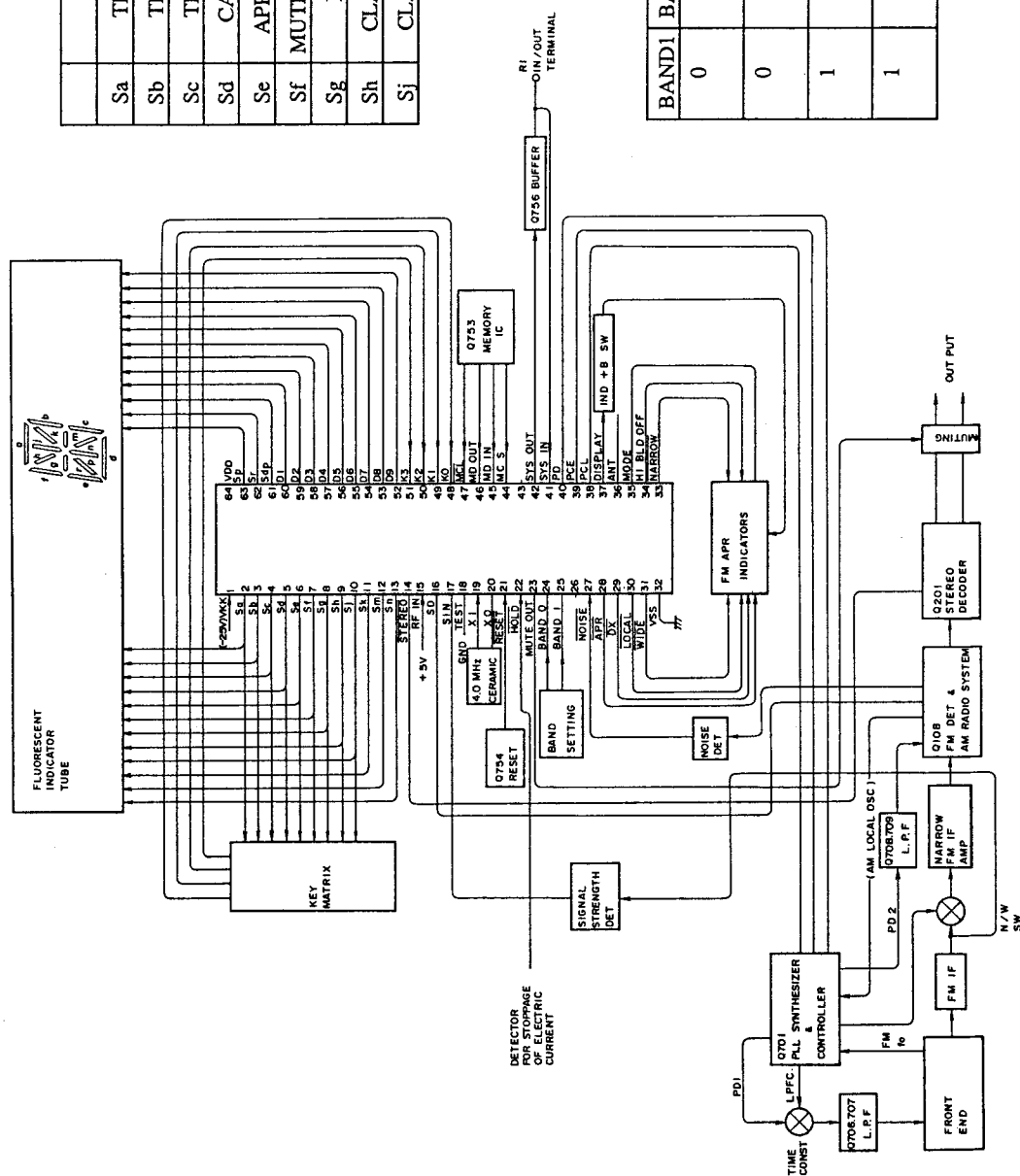
## PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
A1	27110643	Front bracket ass'y <B>	P903	253148	△ AS-CEE,Power supply cord
	27110644	Front bracket ass'y <S>	T901	2300683A	△ NPT-1114P,Power transformer
A13	27100241	Chassis	U1	1A283581-1A	NARF-4181-1A,Main circuit pc board ass'y
A14	27121458	Back panel	U2	1A283582-1A	NADIS-4182-1A,Display circuit pc board ass'y
A15	830440069	4TTC+6C(BC),Self-tapping screw	U3	1A283583-1	NASW-4183-1,Operation switch pc board ass'y
A16	28140881	14×50×15,Cushion	U4	1A283585-1A	NAPS-4185-1A,Power supply pc board ass'y
A18	28133263	Back plate			
A19	38130261A	Dial plate			
A20	28191598	Clear plate			
A22	27300750	△ Bushing , cord			
A23	28324397	Knob, power <B>			
	28324398	Knob, power <S>			
A26	27273069A	Joint,power			
A31	27190524	KGLS-14R,Holder			
A32	834430088	3TTS+8B(BC),Self-tapping screw			
A33	831130088	3TTW+8B,Self-tapping screw			
A35	834230108	3TTS+10B(Ni),Self-tapping screw			
A37	27190511	KGLS-16R,Holder			
A41	28184490A	Top cover			
A51	1A285121	Front panel ass'y <B>			
	1A286121	Front panel ass'y <S>			
A55	833430080	3TTP+8P(BC),Self-tapping screw			
A56	801230	3TTS+8BQ(BC),Self-tapping screw			
A57	28185369	Side panel L			
A58	28185370	Side panel R			
A61	837440169	4TTT+16C(BC),Self-tapping screw			
A62	28135199	Badge			
A71	27175254	Leg			
A72	834430088	3TTS+8B(BC),Self-tapping screw			

NOTE:<B>:Only Black model  
<S>:Only Silver model

NOTE: THE COMPONENTS IDENTIFIED BY MARK △  
ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC  
SHOCK. REPLACE ONLY WITH PART NUMBER  
SPECIFIED.

## MICROPROCESSOR DESCRIPTIONS



	K0	K1	K2	K3
Sa	TEN-1	TEN-2	TEN-3	TEN-4
Sb	TEN-5	TEN-6	TEN-7	TEN-8
Sc	TEN-9	TEN-0	MEMORY	DIRECT
Sd	CABLE	PRESET SCAN	DISPLAY	CHARACTER
Se	APR OPE.	RF MODE	IF BAND	HI BLEND
Sf	MUTE/MODE	ANTENNA	TUNNING LEVEL	
Sg	FM	AM	DOWN/LAST	UP/NEXT
Sh	CLASS-A	CLASS-B	CLASS-C	CLASS-D
Sj	CLASS-E	CLASS-F	CLASS-G	CLASS-H

## Key Matrix

BAND1	BAND0	MODEL	BAND	FREQUENCY RANGE	STEP
0	0	120V	FM	87.50-108.00MHz	50kHz
			AM	530-1710kHz	10kHz
0	1	230V/ 240V	FM	87.50-108.00MHz	50kHz
			AM	522-1611kHz	9kHz
1	0	Worldwide	FM	87.50-108.00MHz	50kHz
			AM	531-1602kHz	9kHz
1	1		FM	87.50-108.00MHz	50kHz
			AM	531-1710kHz	10kHz

## Band Step Setting

## CONNECTION DIAGRAM

## Terminal Description

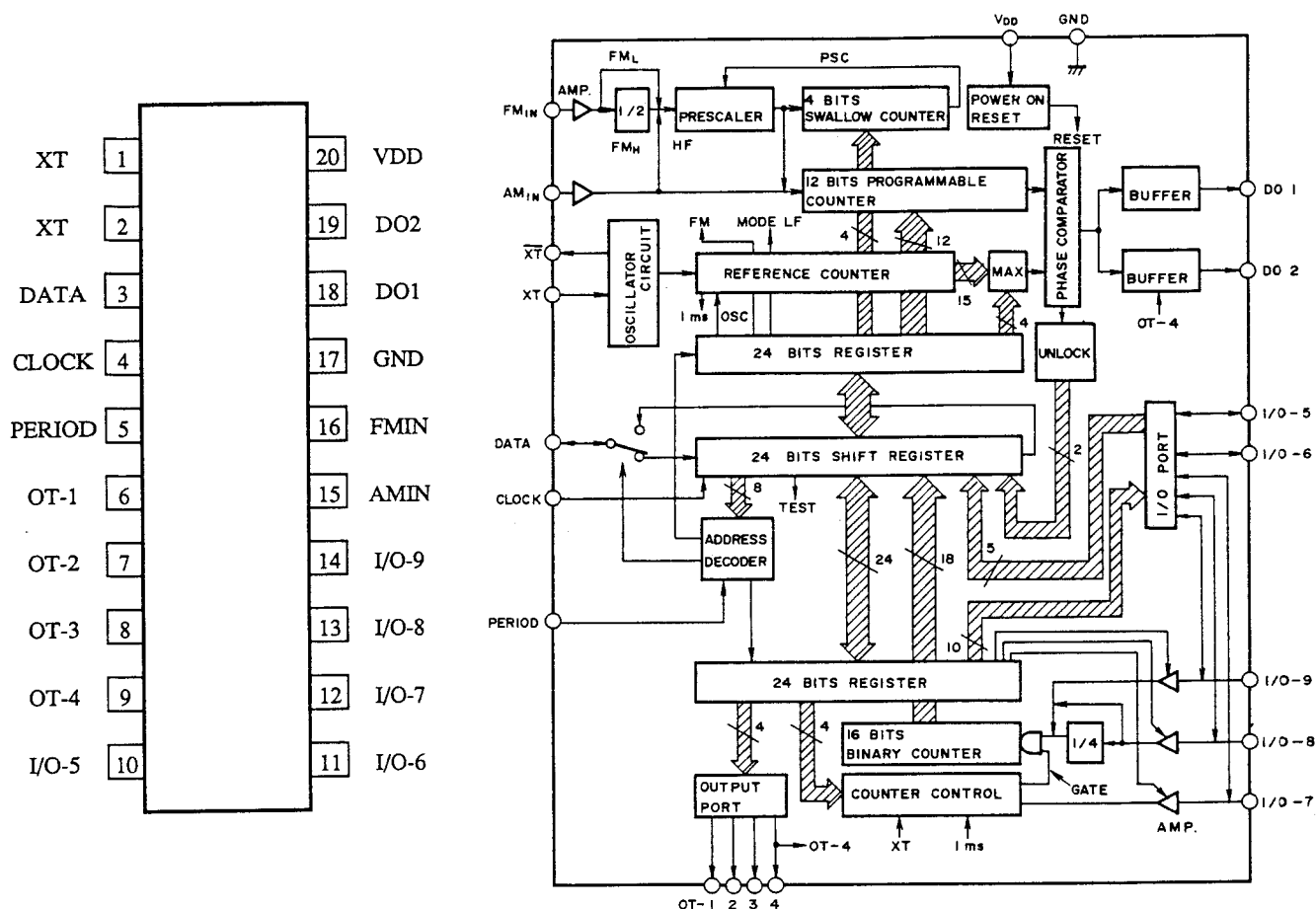
REF.NO.	Symbol	I/O	Description
1	VKK	O	Power supply terminal for driver of FL tube.
2	S0	O	
3	S1	O	
4	S2	O	
5	S3	O	Segment and key matrix signal output terminals.
6	S4	O	L when active.
7	S5	O	
8	S6	O	
9	S7	O	
10	S8	O	
11	S9	O	
12	S10	O	
13	S11	O	
14	STEREO	I	Stereo broadcast detection input terminal. L when active.
15	RFIN	I	RF input terminal. H when DX.
16	SD	I	Broadcast detection input terminal.
17	SIN	I	Signal strength input terminal.
18	TEST		Test terminal. Connect to the terminal VSS.
19	XIN		Connect to the 4.0MHz ceramic oscillator.
20	XOUT		
21	RESET	I	Reset input terminal.
22	POFF	I	Detection input terminal for stoppage of electric current.
23	MUTE OUT	O	Muting output terminal for tuner section.
24	BAND0	I	Initializing input terminal for band region setting.
25	BAND1	I	
27	NOISE	I	Noise detection input terminal.
28	APR	O	APR ON/OFF indication output terminal.
29	DX	O	RF DX indication output terminal.
30	LOCAL	O	RF LOCAL indication output terminal.
31	IF WIDE	O	IF WIDE indication output terminal.
32	VSS		Ground terminal.
33	IF NARROW	O	IF NARROW indication output terminal.
34	HI BLEND	O	HI-BLEND ON/OFF indication output terminal.

REF.NO.	Symbol	I/O	Description
35	MU MO	O	MUTING MODE MONO/AUTO indication output terminal.
36	ANT	O	Antenna indication and changeover circuit driver output terminal.
37	DISPLAY	O	Segment output terminal of FL tube.
38	PCL	O	Clock output terminal to PLL IC TC9217P.
39	PCE	O	Chip selector output terminal to PLL IC TC9217P.
40	PDOUT	O	Data output terminal to PLL IC TC9217P.
41	SYSIN	I	System code input terminal.
42	SYSOUT	O	System code output terminal.
44	MCS	O	Chip selector output terminal to the memory IC TC89102P.
45	MDI	I	Data input terminal from the memory IC.
46	MDO	O	Data output terminal to the memory IC.
47	MCLK	O	Clock output terminal to the memory IC.
48	K0	I	
49	K1	I	Key matrix input terminals.
50	K2	I	
51	K3	I	
52	D9	O	
53	D8	O	
54	D7	O	
55	D6	O	Digit output terminals.
56	D5	O	
57	D4	O	
58	D3	O	
59	D2	O	
60	D1	O	
61	S14	O	
62	S13	O	Segment output terminals.
63	S12	O	
64	VDD		Power supply terminal.(5V)

# BLOCK DIAGRAMS OF IC

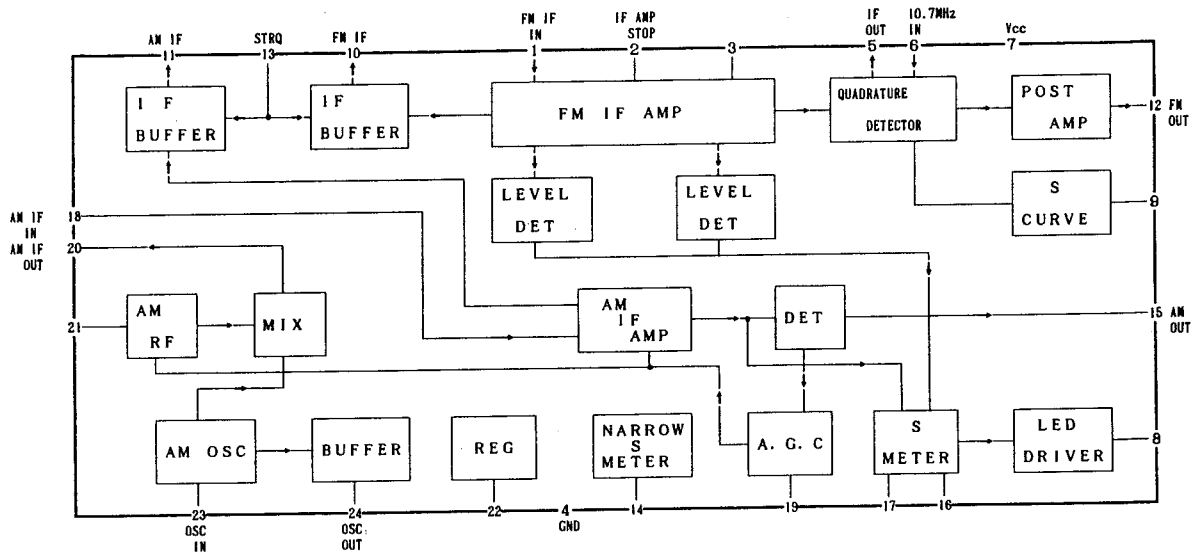
## LC7218P (PLL synthesizer and controller)



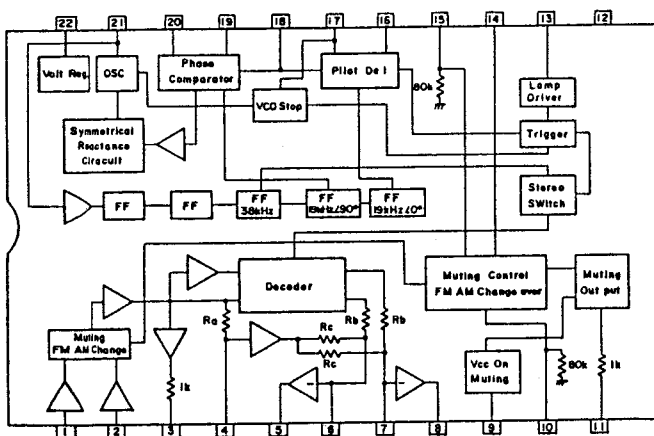
Pin No.	Symbol	Description
1	XT	Crystal oscillator
2	XT	connection terminal
3	DATA	Serial data input/output terminal
4	CLOCK	Clock signal input terminal
5	PERIOD	Period signal input terminal
6	OT-1	Output terminal for changeover circuit of FM band. H when FM.
7	OT-2	Output terminal for changeover circuit of AM band. H when AM.
8	OT-3	Output terminal for changeover circuit of RF. H when LOCAL. L when DX.
9	OT-4	Not used.
10	I/O-5	Output terminal for changeover circuit of FM IF band. H when WIDE.
11	I/O-6	Output terminal for changeover circuit of FM IF band. H when NARROW.
12	I/O-7	Output terminal for changeover circuit of Hi-blend. H when ON.
13	I/O-8	Output terminal for changeover circuit of MUTE/MODE. H when MONO. L when AUTO.
14	I/O-9	Output terminal for time constant changeover of PLL LPF.
15	AMIN	AM local oscillator signal input terminal.
16	FMIN	FM local oscillator signal input terminal.
17	DO1	Phase comparator output terminal.
18	DO2	Phase comparator output terminal.
19	GND	Ground terminal
20	VDD	Power supply terminal



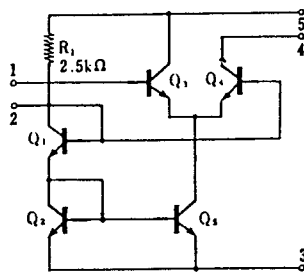
## LA1266A (FM IF &amp; AM radio system)



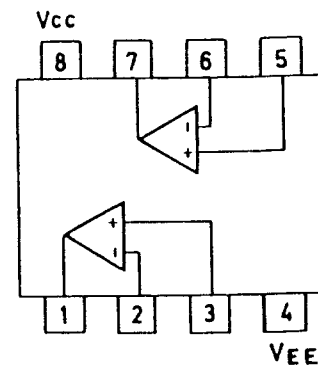
## LA3401 (Stereo decoder)



## TA7060AP (FM IF amp)

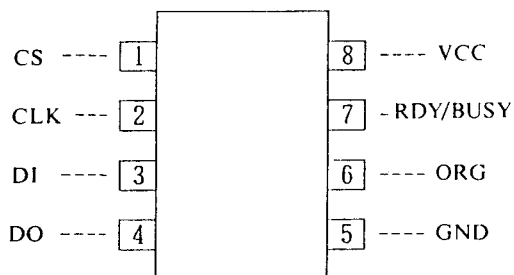


## NJM4565S-B/BA15218N (OP amp)

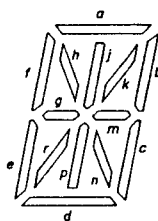
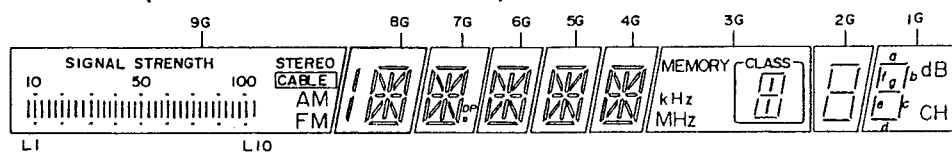


**TC89102P (2048 bits EEPROM)**

(EEPROM: Electrically Erasable Programmable Read Only Memory)



Pin No.	Symbol	Description
1	CS	Chip selector input terminal
2	CLK	Clock input terminal
3	DI	Serial data input terminal
4	DO	Serial data output terminal
5	GND	Ground terminal
6	ORG	Memory constructional selector input terminal.
7	RDY/BUSY	Status output terminal
8	VCC	Power supply terminal

**FIP13FM8 (Fluorescent indicator tube)****PIN CONNECTION**

TERMINAL NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
ELECTRODE	F1	F1	NP	NP	Sp	Sr	Sdp	NP	NP	NP	NP	NP	NP	NP	NP	NP	G1	G2	G3	G4	G5	G6	G7	G8	G9
TERMINAL NO.	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	
ELECTRODE	NP	NP	NP	NP	NP	NP	NP	NP	Sa	Sb	Sc	Sd	Se	Sf	Sg	Sh	Si	Sk	Sm	Sn	NP	NP	F2	F2	

NOTE: F:Filament G:Grid S:Anode

**ANODE CONNECTION**

Pin No.	52	53	54	55	56	57	58	59	60
Pin No.	D9	D8	D7	D6	D5	D4	D3	D2	D1
2	Sa	SIGNAL STRENGTH	a	a	a	a	a	a	a
3	Sb	L1	b	b	b	b	b	b	b
4	Sc	L2	c	c	c	c	c	c	c
5	Sd	L3	d	d	d	d	d	d	d
6	Se	L4	e	e	e	e	e	e	e
7	Sf	L5	f	f	f	f	f	f	f
8	Sg	L6	g	g	g	g	g	g	g
9	Sh	L7	h	h	h	h			
10	Si	L8	i	i	i	i	i		
11	Sk	L9	k	k	k	k	MEMORY		
12	Sm	L10	m	m	m	m	m		
13	Sn	STEREO	n	n	n	n	kHz		dB
63	Sp	CABLE	p	p	p	p	p		CH
62	Sr	AM	r	r	r	r	MHz		
61	Sdp	FM	/	dp			CLASS		

ADJUSTMENT PROCEDURES

- Preparation  
FM mono: 1kHz, 75kHz devi. 60dBμ (65dBf)  
FM stereo: 1kHz, L+R 67.5kHz devi.,  
Pilot signal 19kHz 7.5kHz devi.  
AM: 400Hz, 30% mod.

- Set the operation keies as shown below.  
HI-BLEND: OFF  
RF MODE: DX  
IF BAND: WIDE  
CABLE/MUTE: CABLE

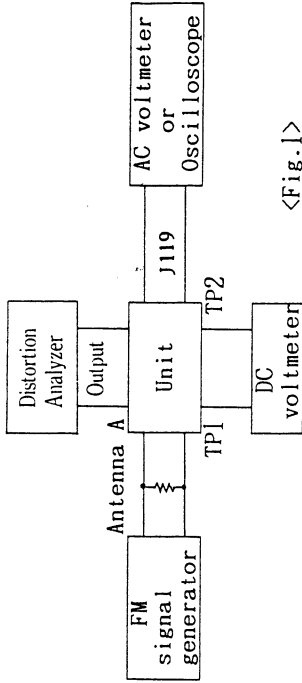
FM section

Item	Step	Connection of instrument	FM SC output	Stereo modulaotr output	Tuned frequency	Output indicator	Adjustment point	Adjust for	Remarks
FM RF/IF	1	Fig. 1	98.1MHz, 1kHz 75kHz devi. 25dB (30dBf)	—	98.1MHz	AC voltmeter	IFT core on front end	Maximum	
	2		60dB (65dBf)			DC voltmeter	L101	0±20mV	Repeat the steps 2 and 3 until no further adjustment is necessary.
	3					Distortion analyzer	L102	Minimum	
FM DET		Fig. 2	98.1MHz, No mod. 60dB (65dBf)	—	98.1MHz	DC voltmeter	L173	0±0.1V	RF MODE:DX
STEREO DISTROTION		Fig. 3	98.1MHz, Ext. mod. 60dB (65dBf)	L+R 67.5kHz devi. Pilot signal 7.5kHz devi.	98.1MHz	Distortion analyzer	IFT core on front end	Minimum	Don't turn more than 180°
STEREO SEPARATION		Fig. 3	98.1MHz, Ext. mod. 60dB (65dBf)	Channel L	98.1MHz	AC voltmeter of right channel	R202	Minimum	Maximum and same separation.
				Channel R		AC voltmeter of left channel		Minimum	
MUTING LEVEL		Fig. 2	98.1MHz, 1kHz, 75kHz devi. 13dB (18.2dBf)	—	98.1MHz	Oscilloscope	R101	Output: ON	CABLE/MUTE SW: OFF CABLE indicator is turned off.
								Output:OFF	
SIGNAL STRENGTH		Fig. 2	60dB (65dBf)	—		10th signal strength	R102	Light on	

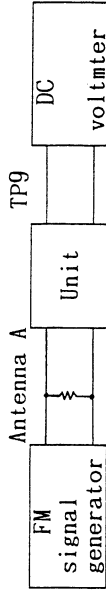
AM section

Step	AM SG output	Tuned frequency	Output indicator	Adjustment point	Adjustment for
1		522kHz	DC voltmeter	OSC coil on L151	1.3±0.1V
2	603kHz 400Hz, 30% mod.	603kHz	AC voltmeter	RF coil on L151	Maximum
3	990kHz 60dB/m	990kHz	AC voltmeter	L151	Maximum
4	990kHz 55dB/m	990kHz	6th signal indicator	R151	Light on

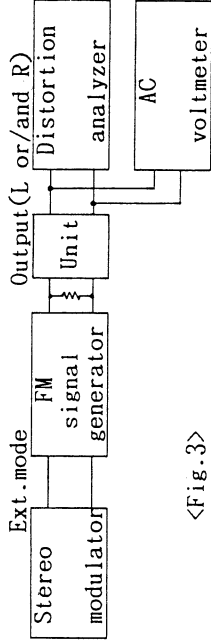
Reference specifications  
Tuned voltage AM:10kHz step models  
1.3±0.4V~7.5±0.4V(530kHz~1710kHz)  
9kHz step models(European models)  
1.3±0.4V~7.0±0.4V(522kHz~1611kHz)  
9kHz step models(Worlwide models)  
1.3±0.4V~7.0±0.4V(531kHz~1602kHz)  
FM:5±0.4V~25±0.4V(87.50MHz~108.00MHz)  
Auto stop level AM:Less than 68dB/m  
FM:Less than 16dBμ



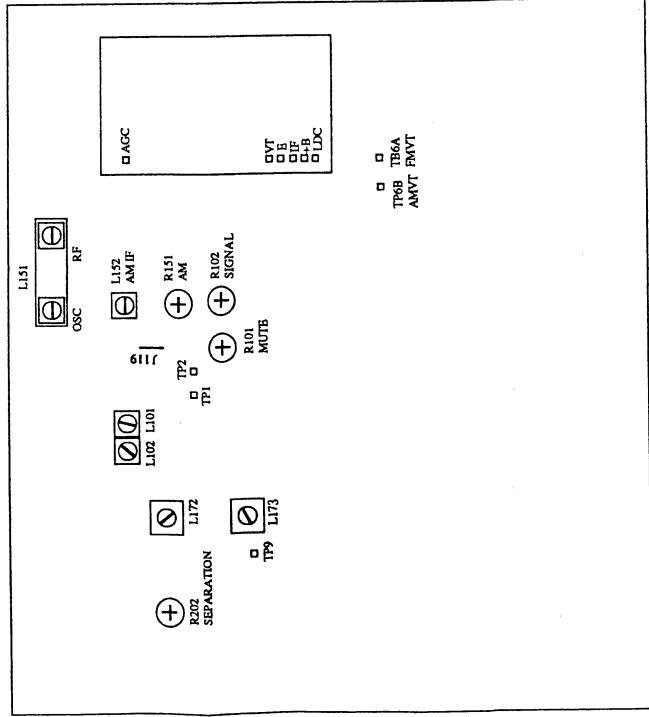
<Fig.1>



<Fig.2>



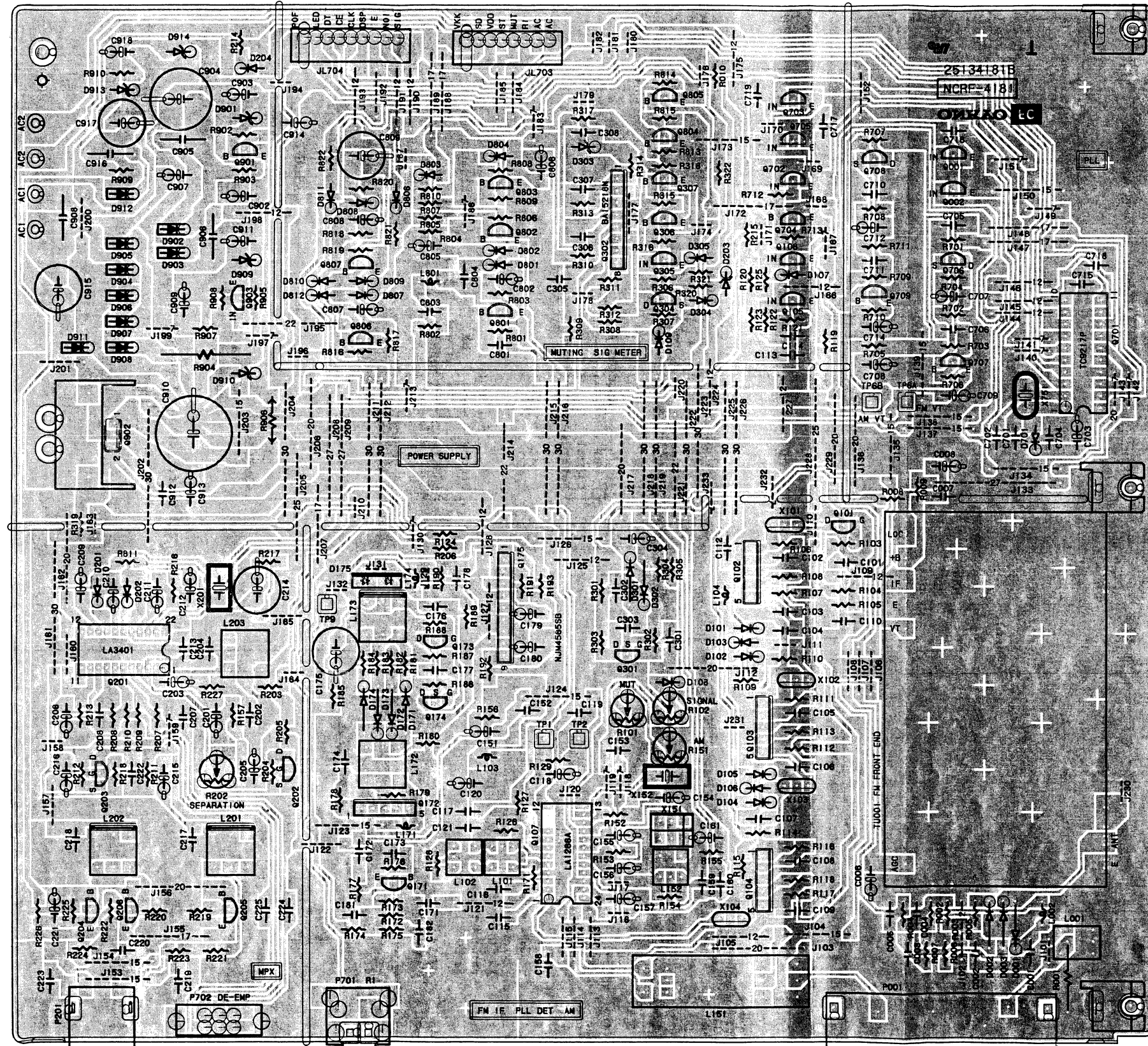
<Fig.3>



Confirmation of tuned voltage

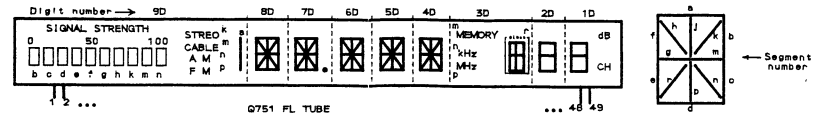


## PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE

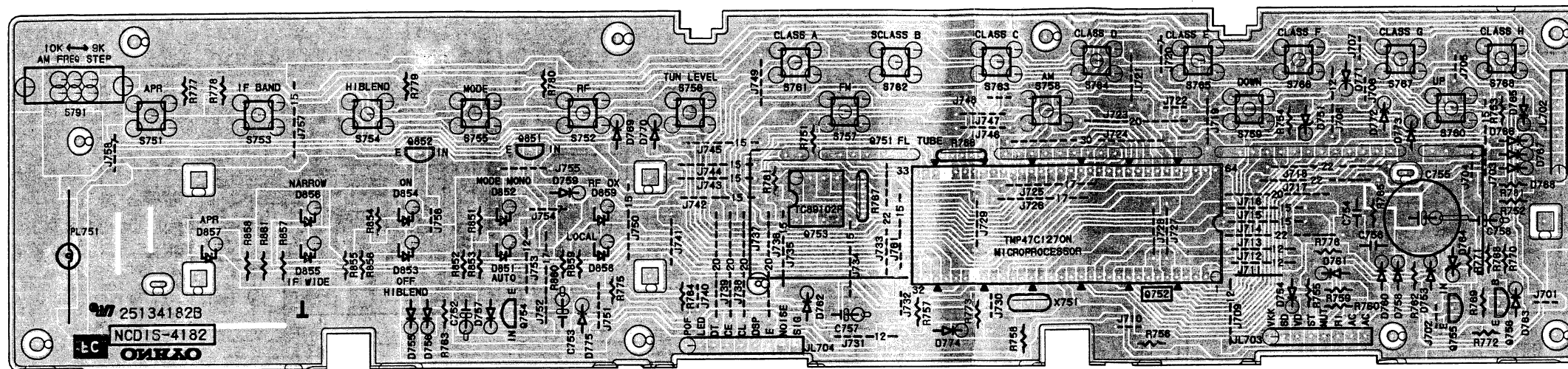


MAIN CIRCUIT PC BOARD

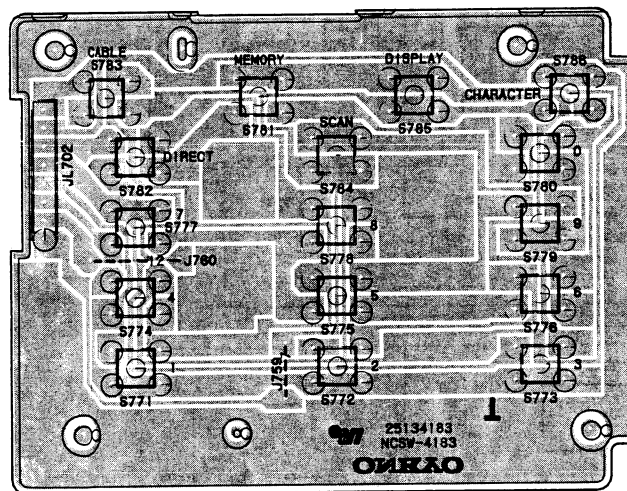




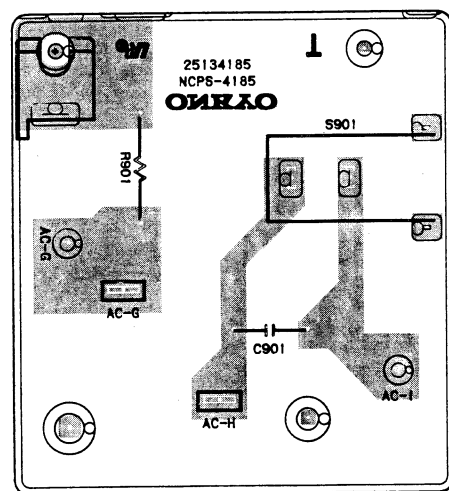
## PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



DISPLAY CIRCUIT PC BOARD



STATION SWITCH PC BOARD



POWR SWITCH PC BOARD

MAIN CIRCUIT PC BOARD(NARF-4181-1A)

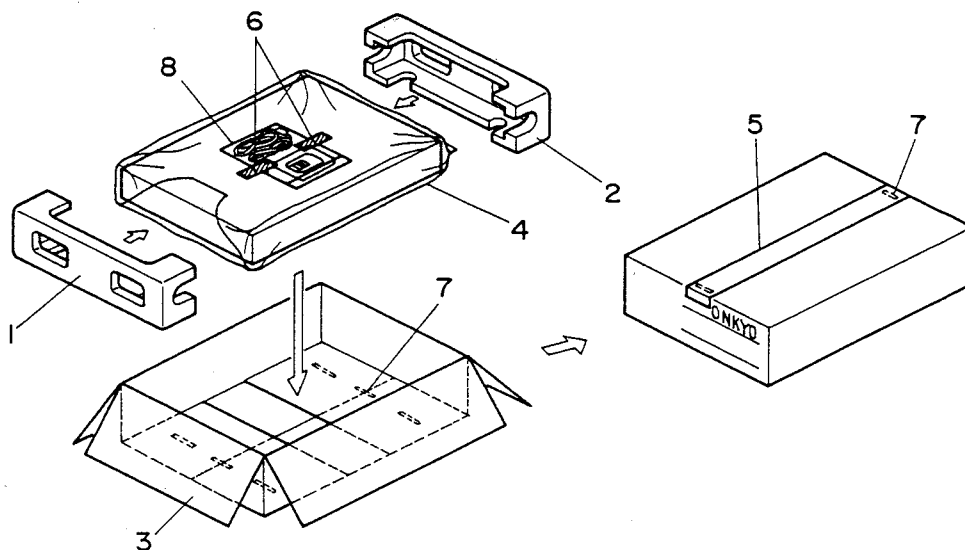
CIRCUIT NO.	PART NO.	DESCRIPTION
U001	240062	BFD636U12
Q102-Q104	222407	TA7060AP
Q107	22240214	LA1226A
Q172	222407	TA7060AP
Q175	22240213	NJM4565S-B
Q201	22240252	LA3401
Q302,Q303	22240247	BA15218N
Q701	22240474	TC9217P
Q902	222780125NEC	78M12HF
Q001	2212600	DTA124ES
Q002	221282	DTC144ES
Q101	2212194 or 2212195	2SK241-Y or 2SK241-GR
Q105,Q106	221282	DTC144ES
Q171	2210746	2SC945A-P
Q173,Q174	2212274	2SK192A-Y
Q202,Q203	2211945	2SK246-GR
Q204	2211455	2SA1015-GR
Q205,Q206	2211705 or 2212794	2SD655-E or 2SD1468-R
Q301	2212274	2SK192A-Y
Q304	2211945	2SK246-GR
Q305	221282	DTC144ES
Q307	2213284	2SC1740S-R
Q702,Q703	221282	DTC144ES
Q704,Q705	2212600	DTA124ES
Q706,Q708	2212445	2SK365-GR
Q707,Q709	2211255	2SC1815-GR
Q801	2211255	2SC1815-GR
Q802-Q805	2213284	2SC1740S-R
Q806,Q807	2211255	2SC1815-GR
Q901	2211255	2SC1815-GR
Q903	221282	DTC144ES

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
D001-D003	223165 or 223149	BA282 or 1SS85	X101,X104	3010137	SFE10.7MMK
D101-D109	223163	1SS133	X102,X103	3010087	SFE10.7MJA
D171-D174	223191	SD101	X151	3010123	SFZ450JL
D175	223136	KV1226	X152	3010076	SFU450C
D201,D202	223163	1SS133	X201	3010152	CSB456F11
D203	224450361	MTZ3.6A	X751	3010181	XTL-7.2M
D204	223163	1SS133			
D301,D302	223132	1K60			
D303	224450621	MTZ6.2A	C006	354741009	10 $\mu$ F,16V,Elect.
D304,D305	223163	1SS133	C008	354742219	220 $\mu$ F,16V,Elect.
D701	223163	1SS133	C118	354780109	1 $\mu$ F,50V,Elect.
D801-D804	223163	1SS133	C120	354744709	47 $\mu$ F,16V,Elect.
D806-D812	223163	1SS133	C151,C211	354782299	0.22 $\mu$ F,50V,Elect.
D901	224453004	MTZ30D	C152	371123334	0.033 $\mu$ F $\pm$ 5%,50V,Mylar
D902-D908	22380032	1SR139-100	C154	354780339	3.3 $\mu$ F,50V,Elect.
D910	224450562	MTZ5.6B	C155,C157	354741009	10 $\mu$ F,16V,Elect.
D911,D912	22380032	1SR139-100	C156	354780479	4.7 $\mu$ F,50V,Elect.
D913	224452204	MTZ22D	C161	354741009	10 $\mu$ F,16V,Elect.
D914	224451203	MTZ12C	C175,C214	354744719	470 $\mu$ F,16V,Elect.
L001	233312	NFA-3051	C179,C180	354741019	100 $\mu$ F,16V,Elect.
L002	233411K100	NCH-1383	C201,C203	354741009	10 $\mu$ F,16V,Elect.
L103,L171	233411M022	NCH-1375	C205,C206	354741009	10 $\mu$ F,16V,Elect.
L104	233411K101	NCH-1395	C207,C208	370132714	270pF $\pm$ 5%,100V,Plastic
L174	233411K220	NCH-1387	C209,C210	354780109	1 $\mu$ F,50V,Elect.
L201,L202	233294	NMC-5040	C212,C806	354780109	1 $\mu$ F,50V,Elect.
L203	233383	NMC-6070	C213	371124734	0.047 $\mu$ F $\pm$ 5%,50V,Mylar
L801	231081	NCH-2129	C215,C216	354741009	10 $\mu$ F,16V,Elect.
L151	232148	NMRF-7050	C217,C218	371123924	390OpF $\pm$ 5%,50V,Mylar
L101	233396	NFIF-4070	C221,C304	354784799	0.47 $\mu$ F,50V,Elect.
L102	233397	NFIF-4071	C222,C706	371121034	0.01 $\mu$ F $\pm$ 5%,50V,Mylar
L152	232139	NMIF-4062	C703,C914	354721019	100 $\mu$ F,6.3V,Elect.
L172	233296	NFIF-4048	C705,C710	371124734	0.047 $\mu$ F $\pm$ 5%,50V,Mylar
L173	233297	NFIF-4049	C707,C802	354784799	0.47 $\mu$ F,50V,Elect.
			C708	354754709	47 $\mu$ F,25V,Elect.
			C709	354781099	0.1 $\mu$ F,50V,Elect.

CIRCUIT NO.	PART NO.	DESCRIPTION	CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors			L.E.Ds	
C712	354780229	2.2 $\mu$ F,50V,Elect.	D851,D853	225137CG,	SEL2413ECG,
C714,C805	354782299	0.22 $\mu$ F,50V,Elect.	D855,D857	225137DG or	SEL2413EDG or
C807	354744709	47 $\mu$ F,16V,Elect.	D858	225137DY	SEL2413EDY
C808	354741009	10 $\mu$ F,16V,Elect.	D852,D854	225142	SEL2913K
C809	354744719	470 $\mu$ F,16V,Elect.	D856,D859	225142	SEL2913K
C902,C918	354761009	10 $\mu$ F,35V,Elect.		Ceramic oscillator	
C903	354761019	100 $\mu$ F,35V,Elect.	X751	3010150	CST4.00MGW
C904	354784719	470 $\mu$ F,50V,Elect.		Capacitors	
C907	354781019	100 $\mu$ F,50V,Elect.	C752	353780109	1 $\mu$ F,50V,Elect.
C909	354764709	47 $\mu$ F,35V,Elect.	C753	353780479	4.7 $\mu$ F,50V,Elect.
C910	354762229	2200 $\mu$ F,35V,Elect.	C754	375524744	0.47 $\mu$ F $\pm$ 5%,50V,Plastic
C911	354781009	10 $\mu$ F,50V,Elect.	C755	3000057	0.1F,5.5V,Super
C913	354742209	22 $\mu$ F,16V,Elect.	C757	353780109	1 $\mu$ F,50V,Elect.
C915	354763319	330 $\mu$ F,35V,Elect.	C758	353761009	10 $\mu$ F,35V,Elect.
C917	354764719	470 $\mu$ F,35V,Elect.		Resistors	
R101	5210070 or	N06HR100KBD or	R766	49163103404	10k $\Omega$ $\times$ 4,1/10W,Network
	5210221	N06HR100KBC,Semi-fixed	R767	49163333404	33k $\Omega$ $\times$ 4,1/10W,Network
R102,R202	5210072 or	N06HR220KBD or		Switches	
	5210124	N06HR200KBC,Semi-fixed	S751-S768	25035548	NPS-111-S510,Push
R151	5210064 or	N06HR10KBD or		Holder	
	5210119	N06HR10KBC,Semi-fixed		27190845A	LED-10
R904	441620624	6.2 $\Omega$ ,1W,Metal oxide film		OPERATION SWITCH PC BOARD(NASW-4183-1)	
R906	442521614	160 $\Omega$ ,1/2W,Metal oxide film		CIRCUIT NO.	PART NO.
	Terminals			Switches	DESCRIPTION
P001	25060087	NTM-2PDMN31	S771-S786	25035548	NPS-111-S510,Push
P201	25045333	NPJ-2PDBL185		POWER SUPPLY PC BOARD(NAPS-4185-1A)	
P701	25045172	HSJ1003-01-020		CIRCUIT NO.	PART NO.
P703	25050272	NSCT-8P-100		Capacitor	DESCRIPTION
P704	25050273	NSCT-9P101		C901	3500065A
	Radiator			Switch	DE7150FZ103PAC400V/125V,IS
P901	27160179	RAD-57		S901	25035636
	Screw				NPS-111-L590P
P902	82143006	3P+6FN(BC)			
	DISPLAY CIRCUIT PC BOARD(NADIS-41821-1A)				
	CIRCUIT NO.	PART NO.			
	FL tube				
Q751	212100	FIP13FM8			
	ICs				
Q752	22240543	TMP47C1270N-V209			
		TMP47C1270N-V208			
		(Before modification)			
Q753	22240475	TC89102P			
	Transistors				
Q754,Q755	221282	DTC144ES			
Q756	2211455	2SA1015-GR			
Q851,Q852	221282	DTC144ES			
	Lamp				
PL751	210064B	PL6.3V250mA			
	Diodes				
D751	224450472	MTZ4.7B			
D753-D763	223163	1SS133			
D764	224450562	MTZ5.6B			
D765-D774	223163	1SS133			

NOTE: THE COMPONENTS IDENTIFIED BY MARK  $\Delta$  ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

# PACKING VIEW



REF.NO.	PART NO.	DESCRIPTION
1	29091495	Pad L
2	29091496	Pad R
3	29052209	Master carton box <B>
	29052210	Master carton box <S>
4	29100037A	650×500, Styrene bag
5	29110071	Damplon tape
6	261504	Adhesive tape
7	282301	Sealing hook
8	Accessory bag ass'y	
	29341637	Instruction manual
	29100097	350×250, Styrene bag
	292092	FM antenna
	232140	NMA-3057, AM loop antenna
	2010098	Connection cord
	2010200	Connection cord RI
	29365020C	Warranty card
	29100094A	Styrene bag for warranty card

NOTE: <B>: Only Black model  
<S>: Only Silver model

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